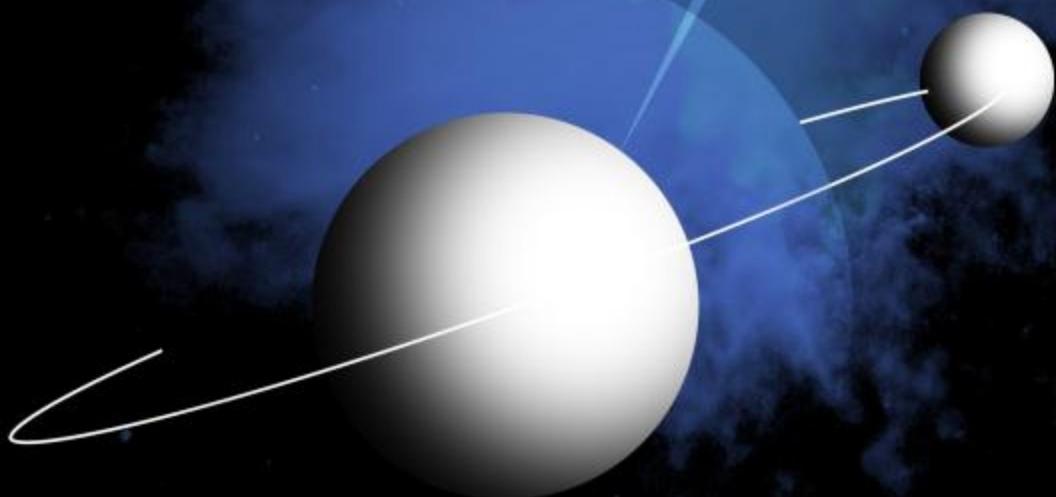




Space Launch System America's Flagship for Exploration



Todd May, Program Manager

April 10, 2014



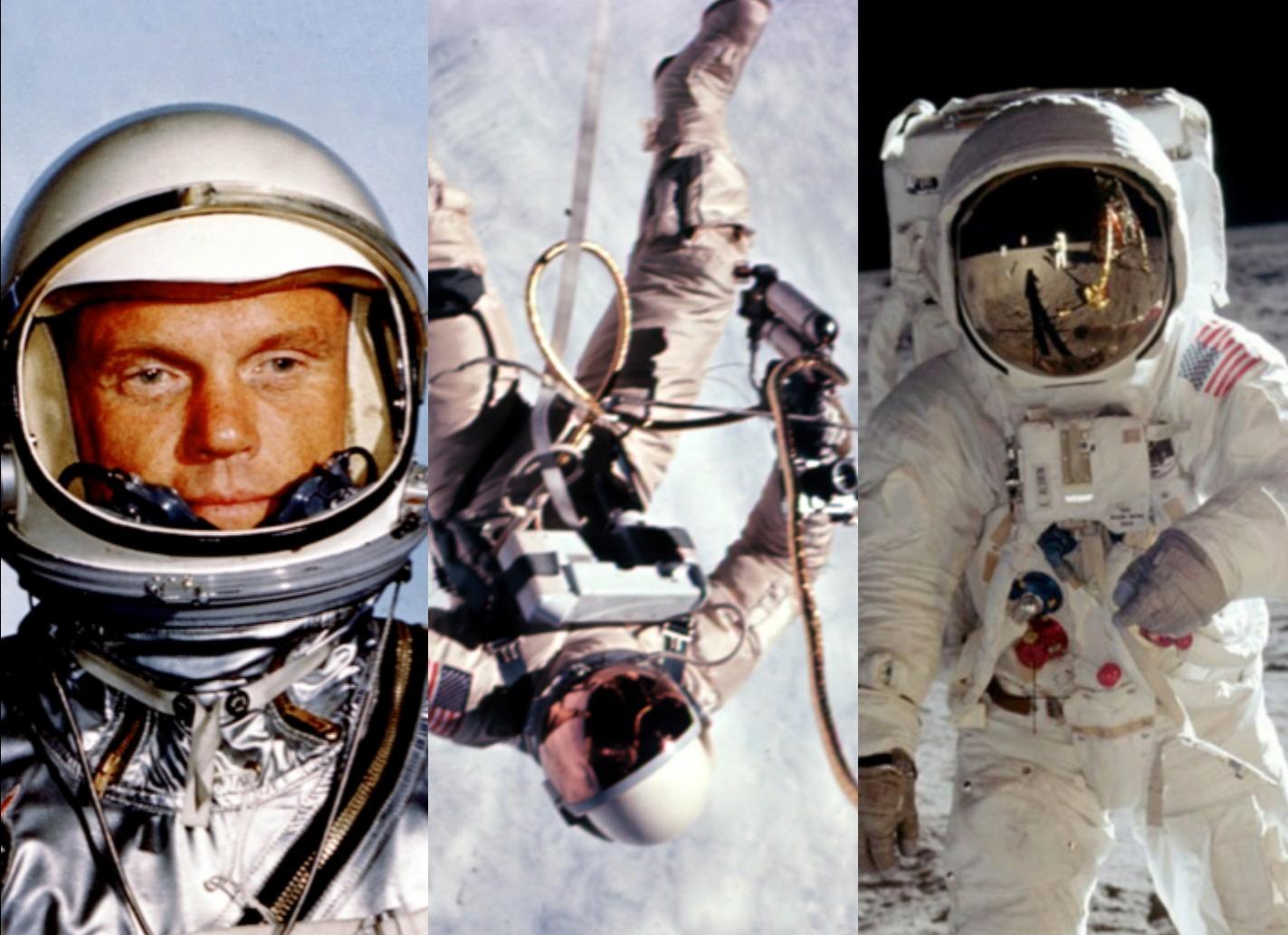
A Deeper Purpose, **A Bolder Mission**



**"We reach for new heights
and reveal the unknown for the
benefit of humankind."**



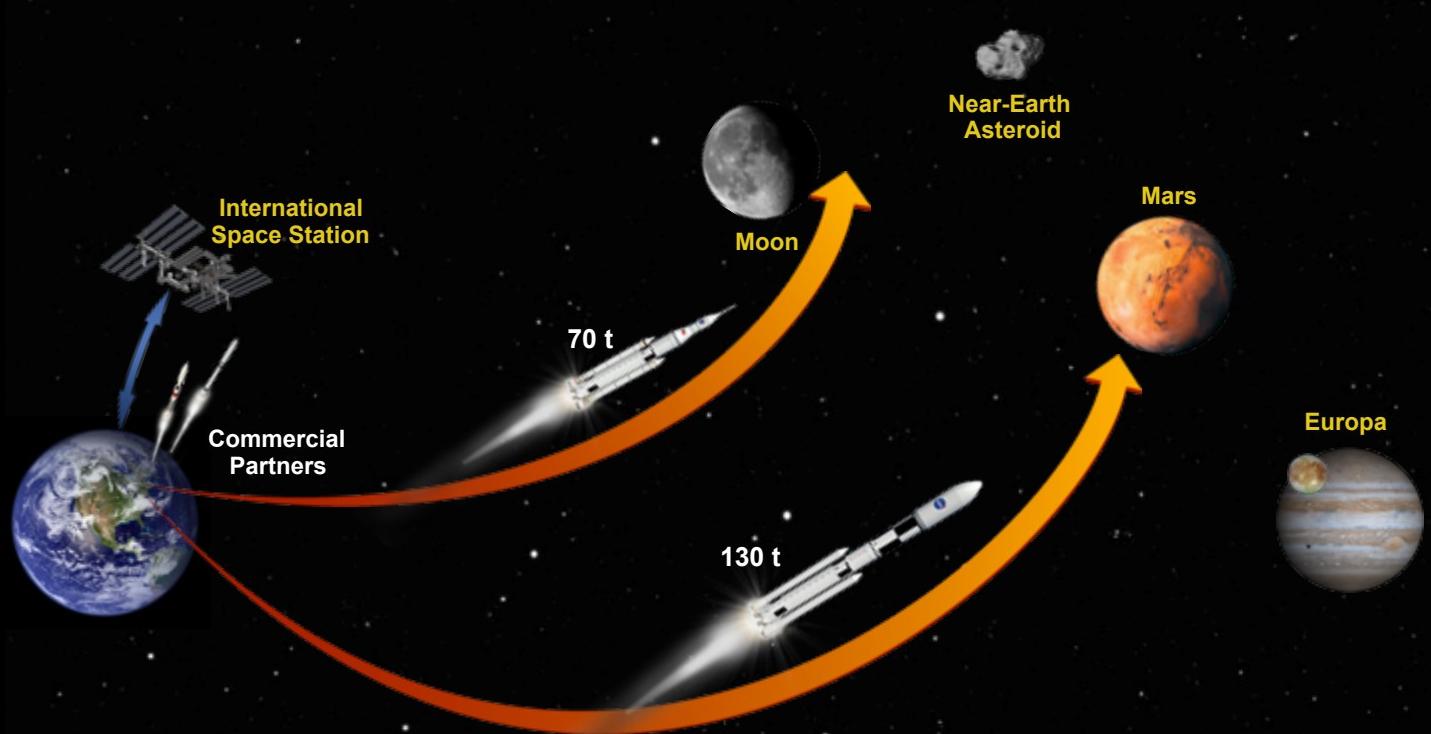
What's Past Is Prologue



NASA's greatest accomplishments are
the things we are about to do



Working together so we can go farther



With our partners launching to orbit,
we can begin a new era of exploration.



Going
Farther,
Learning
More

EARTH
RELIANT

PROVING
GROUND

EARTH
INDEPENDENT

Making the giant leap to Mars
requires a series of new spaceflight firsts.



NASA's Space Launch System



The vehicle that will begin the journey
is taking shape as we speak.



Proven
success.
**Greater
power.**

Stage Adapters:

The Orion stage adapter will be the first new SLS hardware to fly.

Core Stage:

Newly developed for SLS, the Core Stage towers more than 200 feet tall

RS-25 Engines:

Space Shuttle engines for the first four flights are already in inventory



Orion:

Carries astronauts into deep space

Interim Cryogenic Propulsion Stage:

Based on the Delta IV Heavy upper stage; the power to leave Earth

Solid Rocket Boosters:

Built on Space Shuttle hardware; more powerful for a new era of exploration



**'Stack it.
I'm
ready.'**
—Tony
Antonelli

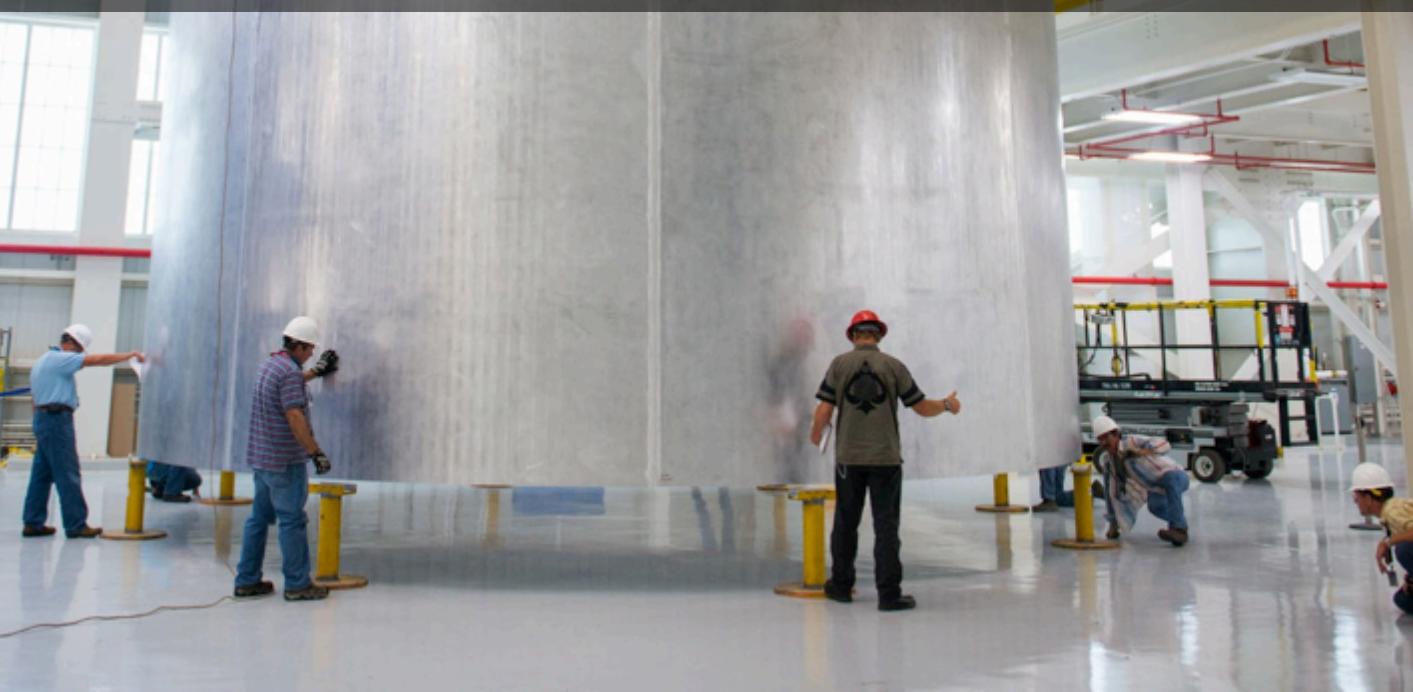


After an in-depth technical review,
the SLS Program is ready to build.



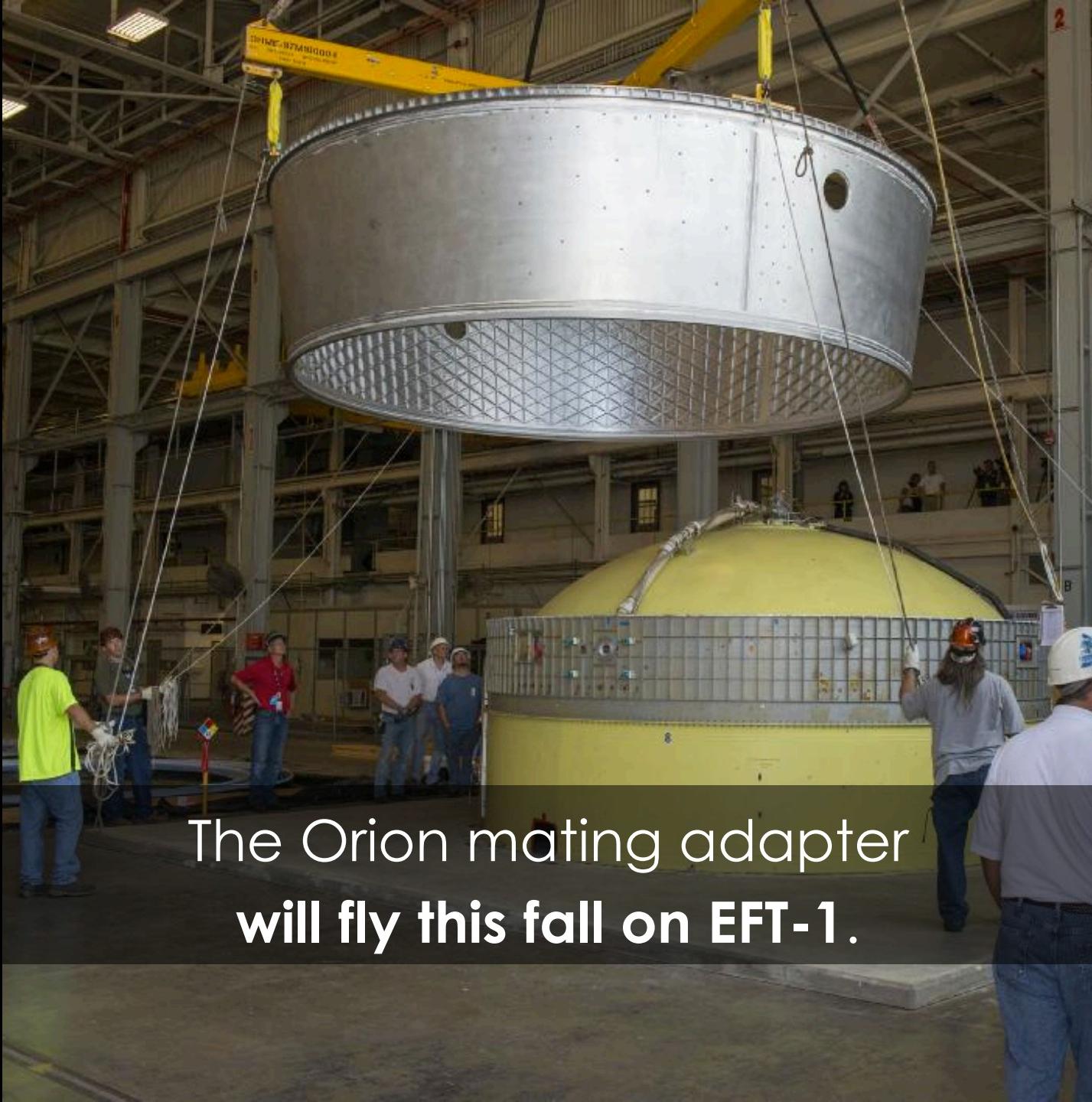
Core Stage is taking shape

New tooling is installed at Michoud
and confidence welding has begun.





Our first
payload
adapter
hardware
is ready
to fly



The Orion mating adapter
will fly this fall on EFT-1.



Testing is
soon for
RS-25
engines



Test stand upgrades have been made
for RS-25 test firings this summer.



New
upgrades
are being
tested for
**Solid
Rocket
Boosters**



Three successful test firings
demonstrated the five-segment motor.



SLS's first launch will send Orion
farther than Apollo ever traveled.

First flight
in
December
2017





SLS is the
first step
in the
journey
to Mars



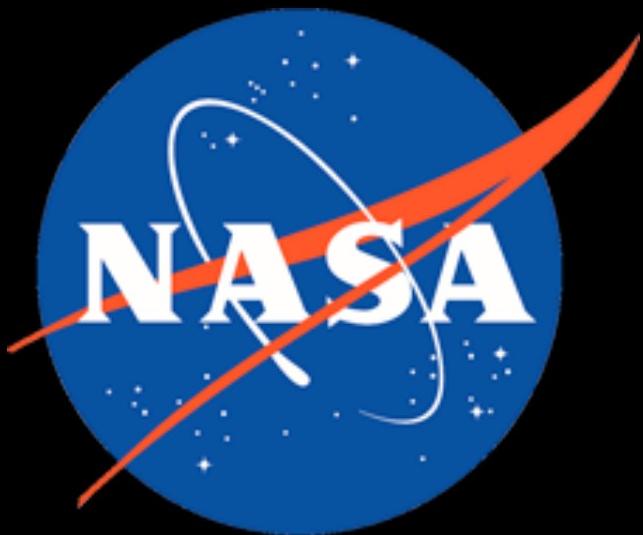
Going to Mars will be difficult.
SLS provides the power that it takes.



The
biggest
challenges
aren't
always
technical.



The SLS team is making great progress.
Help us share our story.



Man cannot discover
new oceans
unless he has the
courage to lose
sight of the shore.

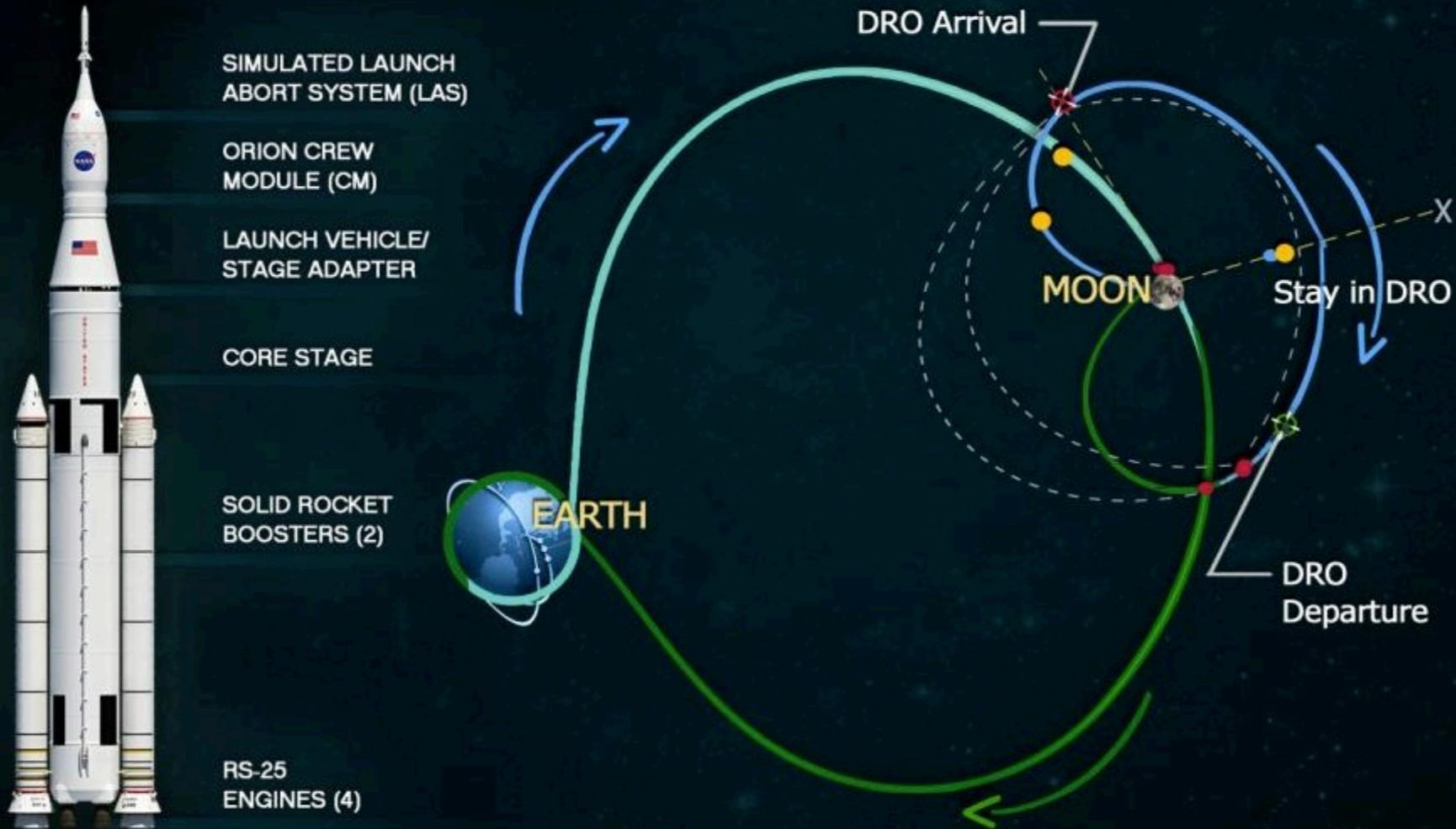
Join us on
the journey

www.nasa.gov/sls
www.twitter.com/nasa_sls
www.facebook.com/nasals
www.instagram.com/explorenasa

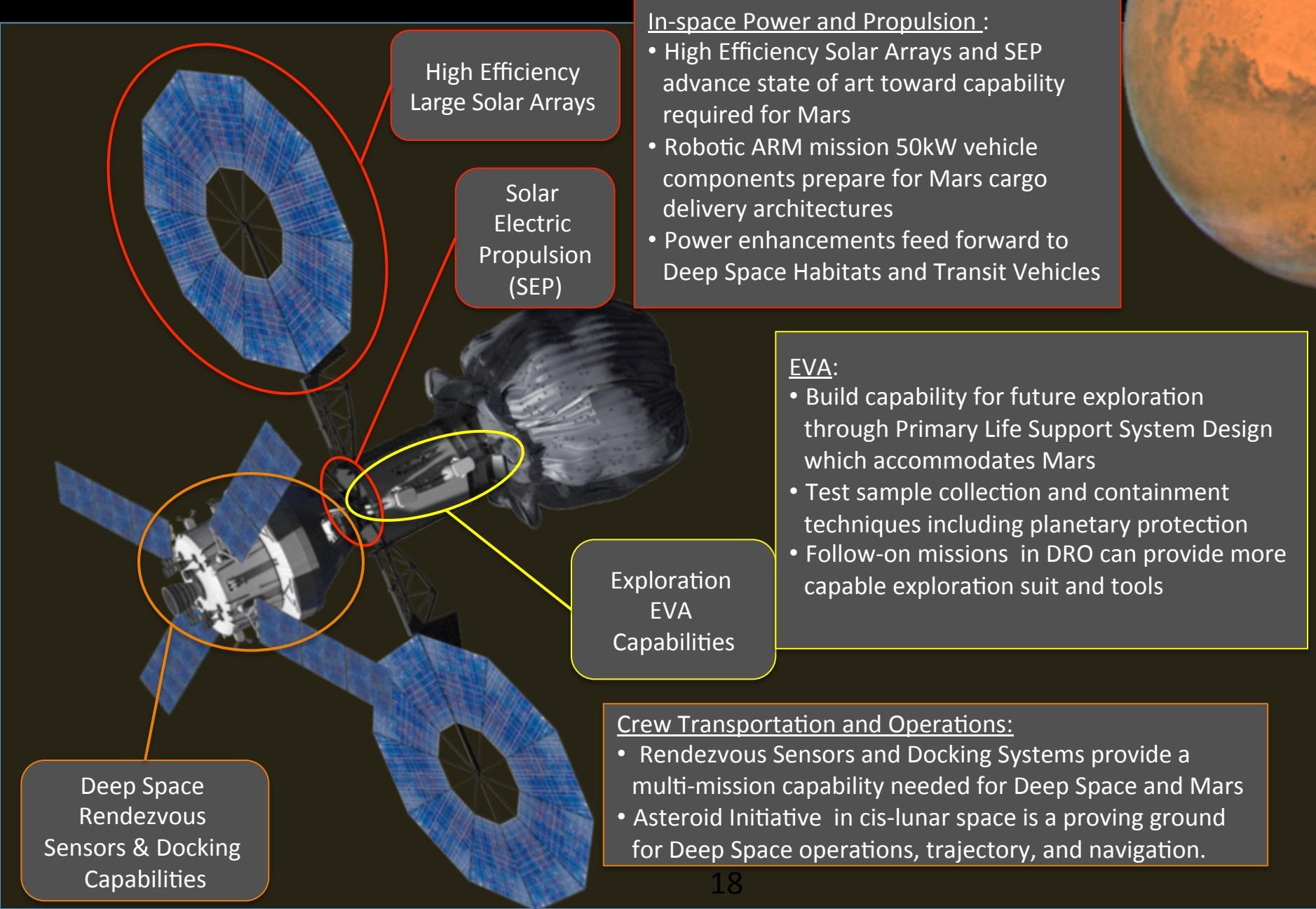


Exploration Mission-1

Distant Retrograde Orbit



Asteroid Redirect Mission Provides Capabilities For Deep Space/Mars Missions



Global Exploration Roadmap 2.0



2013

2020

2030

International Space Station



General Research and Exploration
Preparatory Activities

Note: ISS partner agencies have agreed to use the ISS until at least 2020.

Commercial or Government Low-Earth Orbit Platforms and Missions

Robotic Missions to Discover and Prepare



Mars Sample Return and Precursor Opportunities

Human Missions Beyond Low-Earth Orbit

Explore Near-Earth Asteroid

Multiple Locations
in the Lunar Vicinity

Extended Duration Crew Missions

Humans to Lunar Surface

Missions to Deep Space and Mars System

Sustainable Human Missions to Mars Surface

Human Exploration Building Blocks and Pathways

Develop Fundamental Building Blocks/Capabilities

- SLS
- Orion
- EVA
- SEP/Space Tugs
- AR&D Sensors
- Docking Systems
- Long Cruise Habitat

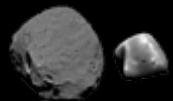
Test Capabilities In Cis-Lunar Space

- Exploration EVA
- Automated Rendezvous & Docking
- Exploration Augmentation Module
 - Mars Transit Habitability
 - High Reliability Life Support
 - Radiation Shielding

On to Mars

At Mars

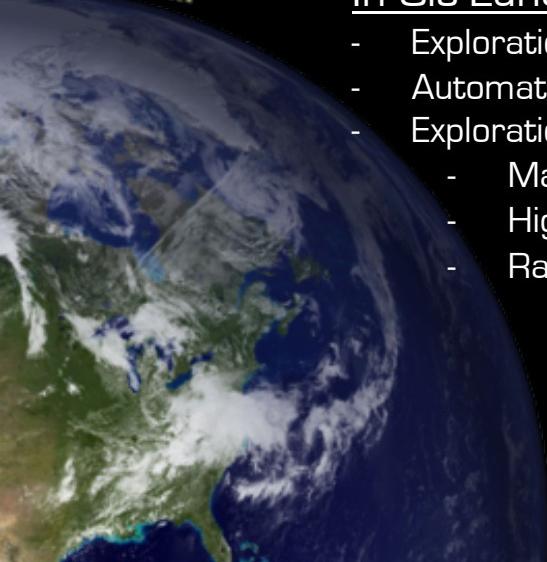
Crewed
Pre-positioned consumables
Orbit Mars or Phobos/Deimos
Possible crewed flyby in 2033



To Mars

To Moon And Beyond
(International and/or Commercial Partners)

"Bringing Moon Within
Economic Sphere of Earth"





Versatile
enough
for a
**universe of
possibility**



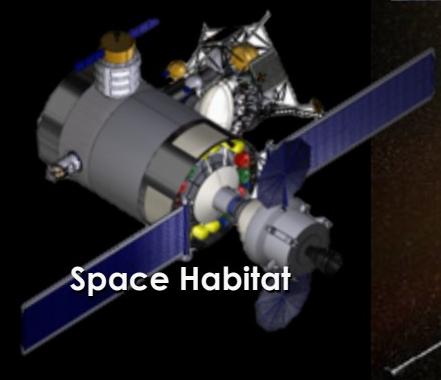
Asteroid Rendezvous



Deep Space Telescope



GEO Servicing



Space Habitat



Solar Probe



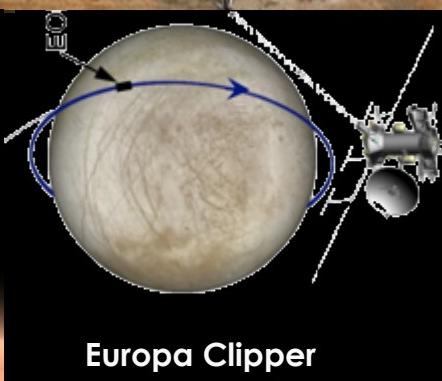
Mars Sample Return



Mars Cargo Lander



Humans to Mars



Europa Clipper



Enceladus Return



Uranus Spacecraft



Interstellar